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## ***Retrieving the times series of input data for assessment of NEA saithe***

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### **Background**

***The report from WKROUND 2010 describes better retrospective performance of the NEA saithe XSA when the age span is expanded from 3-11+ to 3- 15+.***

Until AFWG 2009 age 11 was used as + group. At WKROUND it was only possible to expand the age span back to 1989. Table 1 describes the characteristics of the input data files for the NEA saithe assessment until 2009 (Lowestoft format).

*Table 1. Input data types and characteristics the NEA saithe assessment until 2009*

TYPE	NAME	YEAR RANGE	AGE RANGE	VARIABLE FROM YEAR TO YEAR YES/NO
Caton	Catch in tonnes	1960 – last data year	3 – 11+	Yes
Canum	Catch at age in numbers	1960 – last data year	3 – 11+	Yes
Weca	Weight at age in the commercial catch	1960 – last data year	3 – 11+	Yes/No - constant at age from 1960 - 1979
West	Weight at age of the spawning stock at spawning time.	1960 – last data year	3 – 11+	Yes/No - assumed to be the same as weight at age in the catch
Mprop	Proportion of natural mortality before spawning	1960 – last data year	3 – 11+	No – set to 0 for all ages in all years
Fprop	Proportion of fishing mortality before spawning	1960 – last data year	3 – 11+	No – set to 0 for all ages in all years
Matprop	Proportion mature at age	1960 – last data year	3 – 11+	Yes/No – constant ogive 1960-1984, three year running average since 1985
Natmor	Natural mortality	1960 – last data year	3 – 11+	No – set to 0.2 for all ages in all years

Data from earlier AFWG reports and the former ICES database (IFAP) made it possible to expand the age span to 3-15+ for the whole times series, assuming some of the settings.

*Table 2. Input data types and characteristics the NEA saithe assessment 2010*

TYPE	NAME	YEAR RANGE	AGE RANGE	VARIABLE FROM YEAR TO YEAR YES/NO
Caton	Catch in tonnes	1960 – last data year	3 – 15+	Yes

Canum	Catch at age in numbers	1960 – last data year	3 – 15+	Yes
Weca	Weight at age in the commercial catch	1960 – last data year	3 – 15+	Yes/No - constant at age from 1960 - 1979
West	Weight at age of the spawning stock at spawning time.	1960 – last data year	3 – 15+	Yes/No - assumed to be the same as weight at age in the catch
Mprop	Proportion of natural mortality before spawning	1960 – last data year	3 – 15+	No – set to 0 for all ages in all years
Fprop	Proportion of fishing mortality before spawning	1960 – last data year	3 – 15+	No – set to 0 for all ages in all years
Matprop	Proportion mature at age	1960 – last data year	3 – 15+	Yes/No – constant ogive 1960-1984, three year running average since 1985 Maturity for ages 12-15 is set to 1.
Natmor	Natural mortality	1960 – last data year	3 – 15+	No – set to 0.2 for all ages in all years

### **Caton file**

There were two data sources available, the catch table (5.1.1) from the latest AFWG report (2009) and catches from ICES's fishstat database. Some countries have reported annual landings to fishstat after the assessment for the actual year.

Adjustments were done to ensure that the updated NEA saithe catches are the best choice comparing information reported to Norwegian authorities ("Kvotelett") and fishstat. As a common rule we use the highest catch from the various sources, except for Norway where the fishstat figures are accepted as the official landings.

### **Canun file**

Since catch in numbers have previously been calculated for age span 3-11+, all values had to be recalculated for the whole expanded age span. Catch in numbers for 1960-1988 was SOP adjusted to total weight | age and total catch in canun file (Table 3). For 1989-2008 unadjusted data were available from the basic assessment input files.

### **Weca file**

A WECA data file up to 2001 was available from the former IFAP database. It was not possible to reconstruct the original IFAP database. However it was possible to import single files in a statistical package. We assume that the latest file version covers the latest updated version. For years 1960-1988 we used this data files, while for 1989-2008 data from the basic assessment input files were available (Table 4).

Table 3 Canum file for 1960-2009, ages span 2-15.

1960	6453	13517	16828	17422	6514	6281	3088	1691	956	481	363	260	185	673
1961	7104	25237	12929	17707	5379	1886	1371	736	573	538	275	112	89	726
1962	6184	45932	13720	5449	10218	2991	1262	1156	556	611	369	282	224	643
1963	6105	51171	35199	7165	5659	4699	1337	1308	848	550	467	399	166	580
1964	6090	10925	72344	15966	3299	4214	3223	1518	1482	1282	965	561	443	1069
1965	5755	42578	5737	30171	11635	3282	2421	3135	802	1136	652	509	802	1023
1966	5630	25127	61199	14727	14475	5220	1542	1047	1083	530	628	670	497	929
1967	4813	28457	23826	34493	3957	5388	2797	1356	1340	814	603	528	391	1014
1968	5965	29955	21856	6065	9846	936	2274	1070	686	465	284	168	156	314
1969	4931	76011	11745	16650	4666	4716	1107	1682	663	199	138	30	47	88
1970	5051	43834	63270	14081	16298	5157	8004	2521	3722	1103	762	325	278	349
1971	4022	61743	47522	21614	7661	7690	2326	3489	1760	2514	1045	284	186	373
1972	4261	55351	44490	24752	8650	4769	3012	1584	1817	1044	676	281	222	452
1973	4139	62938	20793	22199	13224	5868	3246	2368	2153	1291	653	670	365	259
1974	5031	36884	44149	15714	20476	12182	4815	3267	2512	1440	1448	433	264	247
1975	5794	70255	13502	18901	5123	9018	7841	3365	2714	2237	1438	530	300	276
1976	5441	1E+05	33159	8618	9448	3725	3483	2905	1870	1183	924	530	152	334
1977	5366	1E+05	36703	10845	2205	4633	1557	1718	1030	495	261	226	62	169
1978	5789	56505	31946	14396	5232	1694	2132	1082	1126	756	786	328	267	345
1979	6139	75819	28545	17280	5384	3550	1178	1659	536	373	344	206	272	264
1980	4956	40303	36202	9100	6302	3161	1322	145	721	406	449	254	236	265
1981	5137	85966	22345	22044	3706	2611	2056	378	286	258	91	147	97	50
1982	5179	35853	67150	13481	8477	1088	1291	476	271	124	116	78	100	44
1983	5300	18216	25108	34543	3408	3178	1243	803	261	215	130	170	99	188
1984	5273	43579	34927	12679	11775	1193	1862	589	585	407	158	123	179	77
1985	5024	48989	11992	7200	5287	3746	776	879	134	274	214	55	126	32
1986	4837	21322	12433	5845	4363	2704	1349	338	438	123	65	30	54	3
1987	5210	18555	51742	4506	3238	3624	784	644	267	263	164	154	102	145
1988	5028	8144	35928	32901	4570	2333	1222	968	321	73	12	2	15	1
1989	12087	12607	19400	33343	18578	1762	352	177	189	1	149	0	36	20
1990	5221	23792	16930	9054	10238	7341	1076	160	112	150	37	31	0	50
1991	2212	68682	13630	5752	4883	3877	2381	383	61	90	68	1	12	8
1992	14395	44627	33294	5987	5412	4751	3176	1462	286	93	46	163	0	141
1993	2942	22812	61931	31102	3747	1759	1378	1027	797	76	35	1	17	18
1994	322	7063	32671	49410	19058	2058	724	421	278	528	92	13	15	9
1995	69	17178	52109	40145	30451	4177	483	125	259	31	176	2	42	43
1996	696	10510	54886	18499	18357	17834	2849	485	214	148	68	196	59	2
1997	278	11789	11698	35011	13567	13452	7058	812	55	48	42	27	21	8
1998	35	3091	16215	11946	31818	8376	5539	2873	727	111	65	19	0	198
1999	91	9655	12236	22872	10347	18930	3374	3343	2290	419	103	24	11	32
2000	1184	9175	22768	7747	10676	6123	8303	2530	2652	1022	151	8	25	13
2001	149	3816	7946	26960	8769	7120	3146	4687	1935	1406	433	60	8	27
2002	92	6582	17492	11573	25671	5312	4276	2382	3431	965	1016	281	68	55
2003	77	2345	50653	13600	7123	9594	5494	3545	2519	2327	1112	420	170	111
2004	1564	1002	6129	33840	10613	7494	8307	2792	3088	2377	2057	338	536	141
2005	1279	26093	12543	9841	23141	10799	5659	7852	2674	713	387	465	357	379
2006	530	1590	68137	12328	10098	16757	8080	5671	5127	1815	1013	733	506	277
2007	140	3144	4115	39889	15301	7963	11302	7749	4138	2157	505	254	52	38
2008	5981	25259	18953	5969	24363	9712	5624	7697	4705	1606	1163	145	108	156
2009	590	5698	38011	9704	6411	16220	4813	2982	3991	2343	1006	236	93	103

Table 4 WECA file for 1960-2009, ages span 1-15+.

1960	0.34	0.71	1.11	1.63	2.33	3.16	4.03	4.87	5.63	6.44	7.11	7.82	8.92	9.50
1961	0.34	0.71	1.11	1.63	2.33	3.16	4.03	4.87	5.63	6.44	7.11	7.82	8.92	9.50
1962	0.34	0.71	1.11	1.63	2.33	3.16	4.03	4.87	5.63	6.44	7.11	7.82	8.92	9.50
1963	0.34	0.71	1.11	1.63	2.33	3.16	4.03	4.87	5.63	6.44	7.11	7.82	8.92	9.50
1964	0.34	0.71	1.11	1.63	2.33	3.16	4.03	4.87	5.63	6.44	7.11	7.82	8.92	9.50
1965	0.34	0.71	1.11	1.63	2.33	3.16	4.03	4.87	5.63	6.44	7.11	7.82	8.92	9.50
1966	0.34	0.71	1.11	1.63	2.33	3.16	4.03	4.87	5.63	6.44	7.11	7.82	8.92	9.50
1967	0.34	0.71	1.11	1.63	2.33	3.16	4.03	4.87	5.63	6.44	7.11	7.82	8.92	9.50
1968	0.34	0.71	1.11	1.63	2.33	3.16	4.03	4.87	5.63	6.44	7.11	7.82	8.92	9.50
1969	0.34	0.71	1.11	1.63	2.33	3.16	4.03	4.87	5.63	6.44	7.11	7.82	8.92	9.50
1970	0.34	0.71	1.11	1.63	2.33	3.16	4.03	4.87	5.63	6.44	7.11	7.82	8.92	9.50
1971	0.34	0.71	1.11	1.63	2.33	3.16	4.03	4.87	5.63	6.44	7.11	7.82	8.92	9.50
1972	0.34	0.71	1.11	1.63	2.33	3.16	4.03	4.87	5.63	6.44	7.11	7.82	8.92	9.50
1973	0.34	0.71	1.11	1.63	2.33	3.16	4.03	4.87	5.63	6.44	7.11	7.82	8.92	9.50
1974	0.34	0.71	1.11	1.63	2.33	3.16	4.03	4.87	5.63	6.44	7.11	7.82	8.92	9.50
1975	0.34	0.71	1.11	1.63	2.33	3.16	4.03	4.87	5.63	6.44	7.11	7.82	8.92	9.50
1976	0.34	0.71	1.11	1.63	2.33	3.16	4.03	4.87	5.63	6.44	7.11	7.82	8.92	9.50
1977	0.34	0.71	1.11	1.63	2.33	3.16	4.03	4.87	5.63	6.44	7.11	7.82	8.92	9.50
1978	0.34	0.71	1.11	1.63	2.33	3.16	4.03	4.87	5.63	6.44	7.11	7.82	8.92	9.50
1979	0.34	0.71	1.11	1.63	2.33	3.16	4.03	4.87	5.63	6.44	7.11	7.82	8.92	9.50
1980	0.45	0.79	1.27	2.03	2.55	3.29	4.34	5.15	5.75	6.11	5.94	6.64	7.73	9.47
1981	0.43	0.73	1.40	2.05	2.76	3.30	4.38	5.95	6.39	6.61	6.88	6.75	7.13	7.66
1982	0.51	0.77	1.12	2.02	2.61	3.27	3.91	4.69	5.63	7.18	7.21	7.00	8.03	9.44
1983	0.60	1.05	1.33	1.86	2.80	4.00	4.18	5.33	5.68	7.31	8.68	8.54	8.57	10.37
1984	0.53	0.71	1.26	2.02	2.70	3.88	4.47	5.36	6.06	6.28	6.89	8.20	9.14	6.47
1985	0.38	0.75	1.33	2.07	2.63	3.28	3.96	4.54	5.55	6.88	8.14	6.06	9.66	13.72
1986	0.32	0.59	1.22	1.97	2.30	2.87	3.72	4.30	4.69	5.84	6.39	8.11	7.55	10.08
1987	0.34	0.53	0.84	1.66	2.32	2.97	4.00	4.72	5.44	5.79	6.28	7.02	8.36	8.48
1988	0.33	0.62	0.87	1.31	2.43	3.87	5.38	5.83	5.36	6.92	8.72	7.88	8.94	10.00
1989	0.45	0.74	0.95	1.40	1.78	2.96	3.73	4.62	4.66	8.34	6.77	10.04	9.13	11.95
1990	0.41	0.71	1.00	1.45	2.09	2.49	3.75	3.90	6.74	4.94	4.93	8.20	8.20	8.59
1991	0.35	0.68	1.05	1.85	2.39	3.08	3.35	4.48	4.66	5.62	6.30	6.73	11.55	9.58
1992	0.44	0.67	1.01	1.92	2.28	2.77	3.20	3.73	6.35	6.90	7.18	6.88	7.50	9.14
1993	0.45	0.61	0.99	1.65	2.46	2.85	3.03	3.71	4.49	5.56	6.56	10.56	6.73	8.41
1994	0.31	0.52	0.76	1.24	2.12	3.22	3.83	4.69	5.31	5.66	6.91	6.30	9.45	8.95
1995	0.44	0.56	0.79	1.19	1.71	2.87	3.78	4.06	5.30	6.86	6.59	7.88	9.16	10.53
1996	0.31	0.59	0.82	1.33	1.84	2.48	3.73	4.32	5.34	5.98	6.26	7.36	9.61	13.64
1997	0.34	0.62	0.95	1.24	1.72	2.35	3.10	4.19	5.79	6.77	6.62	7.30	9.15	11.48
1998	0.35	0.68	1.00	1.48	1.87	2.58	3.07	4.13	5.44	6.70	4.97	5.23	6.80	10.10
1999	0.64	0.67	1.05	1.45	1.93	2.27	2.97	3.61	4.10	4.93	6.59	7.52	7.88	7.46
2000	0.37	0.60	1.03	1.63	2.10	2.67	3.14	3.81	4.41	5.76	7.30	9.95	10.56	11.08
2001	0.39	0.75	1.12	1.54	2.04	2.60	3.14	3.63	4.54	5.05	5.82	6.40	7.88	10.84
2002	0.40	0.69	1.01	1.50	1.97	2.54	3.25	3.77	4.31	4.91	5.69	6.19	7.56	11.71
2003	0.42	0.66	0.91	1.42	1.89	2.54	2.58	3.49	3.75	4.12	5.27	5.94	6.49	11.21
2004	0.23	0.70	1.03	1.37	1.90	2.41	2.98	3.44	3.73	4.14	5.09	5.96	5.99	7.91
2005	0.41	0.59	0.89	1.49	2.09	2.16	2.99	3.24	3.82	3.92	5.14	6.26	6.76	6.62
2006	0.43	0.63	0.83	1.43	1.78	2.27	2.73	3.02	3.90	4.06	5.05	5.79	6.01	8.35
2007	0.44	0.73	1.08	1.41	1.86	2.43	2.94	3.35	3.66	4.17	5.04	6.07	5.23	9.14
2008	0.45	0.63	0.98	1.38	1.92	2.31	2.83	3.16	3.43	3.82	4.09	5.03	5.97	8.56
2009	0.43	0.67	1.01	1.69	2.01	2.38	2.68	3.23	3.43	3.47	4.23	4.87	5.59	7.31

## **Acknowledgements**

We wish to thank the ICES secretariat and the Library at IMR for giving us access to reports from earlier AFWG meetings. The IFAP database made it possible to retrieve the former canum and weca files as they were previously used.

## **Summary**

This WD is meant as an explanation to how the times series input files for the assessment of NEA saithe is expanded to age 15+ at the 2010 AFWG. Table 3 and 4 includes age group 2. This age group is not used in the current assessment.

## ***References***

Wkround report